Bruhath Bengaluru Mahanagara Palike

QUALITY ASSURANCE/QUALITY CONTROL REPORT

Office of the Chief Engineer (Quality Assurance/Control) Annexure-05,
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QUALITY ASSURANCE REPORT/QUALITY CONTROL REPORT

AEE/QA/PR/56 /2022-23, DATE: 5/4/23		
Name of Work	:	Improvements to road from NH-7 to Sanjivini Nagar upto Hebbal Sarovara layout in ward no 7 and ward no 8 in Kodigehalli Subdivision Estimated cost 100.00 Lakhs
Job Code	:	007-20-000080
Bill No.	:	**1st &Final Bill, Rs.1,02,81,238.07 (including GST)**
Name of Agency	:	**M/s SMLP Asphalts, Prop B.B.Umesh, Banglore.**
Type of Test Performed	:	Rebound Hammer test as per IS13311-(2)-1992.& Bitumen Content and Gradation test as per Table 500.10 & Table 500.17 MoRTH V Revision.
Materials on which Tests Was Performed	:	1. RCC Drain (M20) 2. Precast cover slab 100mm thick (M20) 3. Dense Bituminous Macadam (Grade II) 4. Bituminous Concrete (Grade II)
Officers present during inspection	:	1.Sri. Praveen AE – Ward no 08 2. Sri. Somshekar AEE- Kodigehalli Sub division 3. Sri C. Shridhar. AEE-Quality Assurance 4.Sri. Kiran.B. EE-Quality Assurance
Project Management Consultants/Third Party	:	**Tejus Consultants.**
Observations	:	➢ NDT (Rebound hammer test) & Bitumen Content and Gradation Test was conducted by Project Management Consultants at random locations in presence of AE (Ward no 8) and AEE (Kodigehalli Subdivision) along with AEE of QA division and EE of QA division . ➢ The Rebound Hammer Test was conducted randomly on RCC Drain Wall (M20), Precast Cover Slab 100mm thick (M20) and also Bitumen content & Gradation Test were conducted for DBM (Grade II) & BC (Grade-II). The readings and results are recorded by the PMC consultants. ➢ The readings of Rebound Hammer Test and Bitumen Content & Gradation Test results are tabulated and analysis of test results done by PMC is here by furnished. ➢ The location wise test results are reproduced in the tables shown below.
Test Locations	:	Location 1: Shanthivana 2nd Cross Road (Opp.House No.19) Location 2: Cross Road NTI Layout (Infront of Keshav House, Compound Corner, House No.152)

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Table-01: Rebound Hammer Test Results for Location-1

Sl. No.	Landmark	Member	Rebound Hammer Number	Average reading	Compressive Strength (N/mm2) for 28 days	Impact Direction
Sample Tested Location at Shanthivana 2nd Cross Road						
1	Opp.House No.19	Precast Cover Slab 100mm thick (M20)	36	35.00	21.38	Vertical down
2			35			
3			34			
4			35			
5			33			
6			35			
1		RCC Drain Wall (M20)	32	30.0	20.59	Horizontal
2			28			
3			30			
4			30			
5			28			
6			30			

Table-02: Bitumen Content and gradation Test Results for Cross Road NTI Layout at random locations
DBM- (GRADE-II)

Landmark/Location	Infront of Keshav House	Compound Corner	House No.152
Description	Trail 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	611	598	622
2. Initial weight of filter paper (gms) w2	2	2	2
3. final weight of sample after extraction (gms) w3	585	573	596
4. Final weight of filter paper (gms) w4	4	4	4
5. Weight of finess (gms) w5=(w4-w2)	2	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w3+w5	28	27	28
7. Bitumen content in % (w6/w1)x100	4.58	4.52	4.50
8. Average	4.53		

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.10
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative % Passing	
37.5	0.0	0.0	0.00	100.00	100
26.5	52.0	52.0	8.89	91.11	90 - 100
19	102.0	154.0	26.32	73.68	71 - 95
13.2	85.0	239.0	40.85	59.15	56 - 80
4.75	82.0	321.0	54.87	45.13	38 - 54
2.360	78.0	399.0	68.21	31.79	28 - 42
0.300	72.0	471.0	80.51	19.49	7 - 21
0.075	76.0	547.0	93.50	6.50	2 - 8

SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.10
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
37.5	0.0	0.0	0.00	100.00	100
26.5	47.0	47.0	8.20	91.80	90 - 100
19	103.0	150.0	26.18	73.82	71 - 95
13.2	96.0	246.0	42.93	57.07	56 - 80
4.75	88.0	334.0	58.29	41.71	38 - 54
2.360	71.0	405.0	70.68	29.32	28 - 42
0.300	68.0	473.0	82.55	17.45	7 - 21
0.075	60.0	533.0	93.02	6.98	2 - 8

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SIEVE SIZE mm	Trail 3				Requirement as per MORTH table 500.10
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
37.5	0.0	0.0	0.00	100.00	100
26.5	51.0	51.0	8.56	91.44	90 - 100
19	102.0	153.0	25.67	74.33	71 - 95
13.2	98.0	251.0	42.11	57.89	56 - 80
4.75	92.0	343.0	57.55	42.45	38 - 54
2.360	78.0	421.0	70.64	29.36	28 - 42
0.300	72.0	493.0	82.72	17.28	7 - 21
0.075	62.0	555.0	93.12	6.88	2 - 8

Table-03: Bitumen Content Test Results for Cross Road NTI Layout at random locations

BC- (GRADE-II)

Landmark/Location	Infront of Keshav House	Compound Corner	House No.152
Description	Trial 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	551	531	560
2. Initial weight of filter paper (gms) w2	2	2	2
3. final weight of sample after extraction (gms) w3	523	504	531
4. Final weight of filter paper (gms) w4	4	4	4
5. Weight of finess (gms) w5=(w4-w2)	2	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w3+w5	30	29	30
7. Bitumen content in % (w6/w1)x100	5.44	5.46	5.53
8.Average		5.47	

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.00	100.00	100
13.2	47	47.0	8.99	91.01	90-100
9.5	95	142.0	27.15	72.85	70-88
4.75	91	233.0	44.55	55.45	53-71
2.36	55	288.0	55.07	44.93	42-58
1.18	51	339.0	64.82	35.18	34-48
0.6	41	380.0	72.66	27.34	26-38
0.3	38	418.0	79.92	20.08	18-28
0.15	28	446.0	85.28	14.72	12-20
0.075	32	478.0	91.40	8.60	4-10

SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.00	100.00	100
13.2	41	41.0	8.13	91.87	90-100
9.5	95	136.0	26.98	73.02	70-88
4.75	90	226.0	44.84	55.16	53-71
2.36	62	288.0	57.14	42.86	42-58
1.18	35	323.0	64.09	35.91	34-48
0.6	32	355.0	70.44	29.56	26-38
0.3	35	390.0	77.38	22.62	18-28
0.15	32	422.0	83.73	16.27	12-20
0.075	56	478.0	94.84	5.16	4-10

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SIEVE SIZE mm	Trail 3				Requirements as per MORT&H table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.00	100.00	100
13.2	43	43.0	8.13	91.87	90-100
9.5	101	144.0	27.22	72.78	70-88
4.75	98	242.0	45.75	54.25	53-71
2.36	55	297.0	56.14	43.86	42-58
1.18	42	339.0	64.08	35.92	34-48
0.6	41	380.0	71.83	28.17	26-38
0.3	35	415.0	78.45	21.55	18-28
0.15	31	446.0	84.31	15.69	12-20
0.075	42	488.0	92.25	7.75	4-10

Conclusion:

The file containing **1st & final** bill has been submitted for the above work to QA department on **27.03.2023** requesting for spot inspection. Engineers of QA/QC division have visited the work spot on **31.03.2023.**

During the inspection, engineer in charge of work informed that items found in the bill, have been executed by the contractor & documents were made available for inspection.

Third party consultants team were instructed to assess the strength of concrete used for RCC Drain Wall (M20) & Precast cover slab 100mm thick (M20) and also Gradation & Bitumen content for DBM (grade-II) & BC (Grade-II) on Asphalted road. The Rebound hammer test and Bitumen Content and Gradation Tests were conducted by Third party consultants in presence of engineer in charge of work.

From the test results furnished by Third party consultants, it is concluded that the results of the samples collected are in accordance with the standards/ specifications mention in the IRC codes. However, the results submitted by the Third party consultants have been reproduced here with for further needful action. The results checked by QA/QC relates only for item tested in the particular location randomly.

Further, QA/QC directs the Engineer in-charge of the work that all materials used for the work shall be inspected, tested and accepted as per the relevant specifications before incorporation in the work. The frequencies and methods of sampling and testing materials, including those required for definite purpose and not covered by MORT&H specifications shall be in accordance to the relevant IRC or BIS or AASHTO/ASTM/BS standards in order of priority.

The concerned Engineer in charge of the work shall follow the direction issued by Chief Commissioner Letter number dated 01.08.2022 and 14.09.2022 and take necessary action as appropriate in accordance with the law.

Note: -

This report by QA/QC is pertaining to the work carried out in 1st & final bill only.

Engineer in charge of work shall display details of work, work code, cost of project, start and completion date, and information of Engineer in charge of work with contact numbers at work spot.

Engineer in charge of work and Agency shall ensure that if any damages or defects occur pertaining to the executed work within the Defect Liability period (DLP) as per agreement .The same shall be rectified immediately on top priority without fail.

5/4/23

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Location 1: Shanthivana 2nd Cross Road (Opp.House No.23, Opp.House No.19)

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Location 2: Cross Road NTI Layout (Infront of Keshav House, Compound Corner, House No.152)

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05/04/23
ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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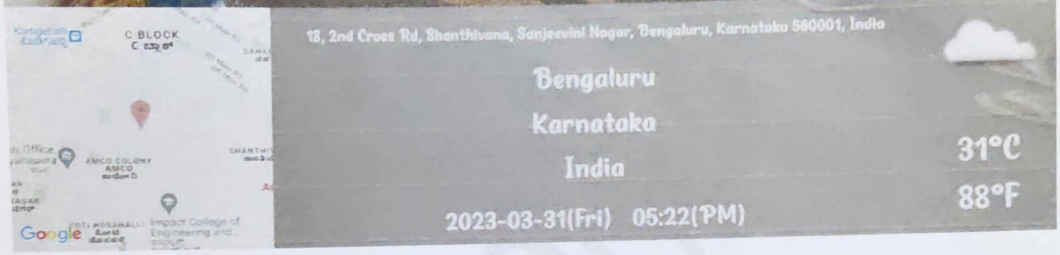

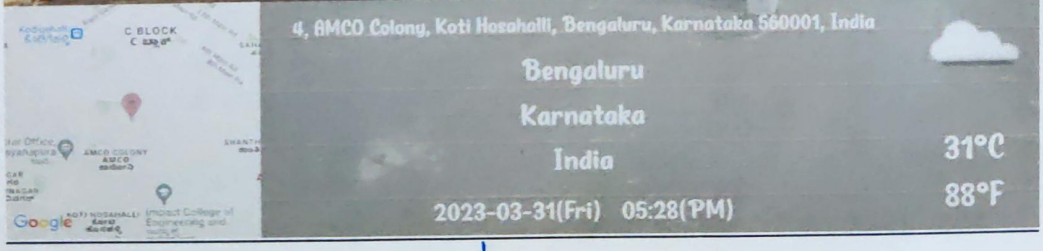

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